

In the Claims

The following Listing of Claims replaces all prior versions in the application:

LISTING OF CLAIMS

1. (Currently amended) A process for reconstructing a tomographic image of an especially mobile and deformable object, the process comprising:

generating, using either an emissive source located at the focal point, or an emissive substance absorbed by the object, divergent radiation from a focal point and passing through the object, the focal point being mobile about the object,

generating an image from ~~the image being~~ a set of values of the property taken by points of the object using the divergent radiation from a focal point and passing through the object, said divergent radiation being produced either from an emissive source located at the focal point, or from an emissive substance absorbed by the object, the focal point being mobile about the object,

wherein an analytical model of mobility and deformation of the object defined for each position of the focal point, and an analytical calculation process for obtaining said values from totals of the values of the property along projection lines leading to the focal point by extending between the focal point and detectors which measure said totals of the values of the property and are collimated towards the focal point and passing respectively by the points, characterized in that the model is improved, and is a variable combination being acquired, this combination including translations, rotations and homotheties of the object from an origin, ~~and in that the process of analytical calculation comprises~~ further comprising:

- weighting the measurements, said weighting being dependent on the analytical model of mobility and deformation of the object;
- deriving the measurements weighted following the trajectory of the focal point considering a direction adapted to the model, said direction being kept constant, and obtaining modified measurements; ~~and~~
- retorprojecting the modified measurements; and
- presenting an image of the object based on said reconstruction.

2. (Previously Presented) The process for reconstruction of an image as claimed in Claim 1, characterized in that it comprises a step of integration interval definition giving $f_0(\vec{x}_0)$ such that the projection lines have directions extending over an interval of N semi-turns considered in a state of the object where the image is reconstructed, N being greater than or equal to 1.
3. (Previously Presented) The process for reconstruction of an image as claimed in Claim 1, characterized in that it is applied with a particular analytical mobility and deformation model at each point of the object.
4. (Previously Presented) The process for reconstruction of an image as claimed in Claim 3, characterized in that the improved linear part of the particular analytical model corresponds to the improved local approximation of a family of trajectories passing through points located in the region of each point.
5. (Previously Presented) The process for reconstruction of an image as claimed in Claim 2, characterized in that the directions of the projection lines are considered at the point of the object where the process is applied.
6. (Previously Presented) The process for reconstruction of an image as claimed in Claim 1, characterized in that reconstruction is carried out first by sub-images constructed with projection lines having directions in the angular intervals smaller than a semi-turn, in that it comprises a stage of determining the angular intervals to which the projection lines belong, and in that it comprises a stage of combining the sub-images after correction of the general analytical model of mobility and deformation of the object between the positions associated with different reference instants associated with each angular interval.
7. (Previously Presented) The process for reconstruction of an image as in Claim 1, characterized in that the general analytical model of mobility and deformation of the object is periodical and in that the reference instants are selected for the same phase of periods of movement of the object.

8. (Previously Presented) The process for reconstruction of an image as in Claim 1, where radiation is conical, characterized in that prior to the step of filtering the acquired measurements, the process comprises a stage of weighting the acquired measurements adapted to acquisition of the measurements in conical geometry and in that the retroprojection is performed according to the conical geometry by taking into consideration the analytical model of mobility and deformation of the object.

9. (Previously Presented) The process for reconstruction of an image as in Claim 1, characterized in that weighting of the measurements is preceded by filtering the measurements acquired by a Hilbert filter.

10. (Previously Presented) The process for reconstruction of an image as in Claim 1, characterized in that the improved model is obtained by approximation of real deformations of the object according to an approximation criterion.